Appl. No. 09/684,401
Amendment dated February 2, 2005
Reply to Office Action of November 2, 2004

COMMENTS AND RESPONSE

In view of the comments below, Applicant respectfully request that the Examiner

reconsider the present application including rejected claims, as amended, and withdraw the claim

rejections.

Information Disclosure Statement rejection

The Examiner noted that the information disclosure statement filed May 27, 2004, fails to

comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because a number of

references are non-published patent applications and not prior art. In addition, he noted that a

number of the references are not prior art due to their filing date.

Applicants acknowledge this fact and ask that the relevant documents simply be placed in

the application file.

Claim Rejections 35 USC § 102

The Examiner has rejected claims 1-6, 12-25, 31-49, 55-77 and 83-88 under 35 U.S.C.

§ 102(e) as being allegedly anticipated by United States Patent No. 6,763,057 to Fullerton et al.

("Fullerton"). Applicant respectfully traverses this rejection. Fullerton does not disclose every

element

By this response Applicants have amended claim 1 to recite "changing a value of said

predetermined threshold," and "repeating said steps of comparing and shifting using the changed

predetermined threshold." This can be seen in the exemplary embodiment, for example, from

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page 20, line 31, through page 23, line 13, and on page 27, lines 18-31, of Applicants'

specification, as well as in FIGs. 6, 7, and 12.

In particular, claim 1 requires that the threshold against which a parameter of the analysis

result is compared is changed and a new comparison is performed. In this way, a synchronization

can be attempted at lower and lower signal qualities until a minimum signal quality is reached

below which synchronization is not possible.

In contrast, Fullerton simply discloses that the output of the correlator 710 (i.e., the

baseband signal 712) is also input to a low pass filter 742 (i.e., the lock loop filter 742). A control

loop comprising the low pass filter 742, the time base 718, the precision timing generator 714,

the template generator 728, and the correlator 710 is used to generate a filtered error signal 744.

The filtered error signal 744 in turn provides adjustments to the adjustable time base 718 to time

position the periodic timing signal 726 in relation to the position of the received signal 708. (See,

e.g., Fullerton, column 5, lines 23-46, and FIG. 1a.) However, nothing in Fullerton discloses or

suggests that the parameters of the lock loop filter 742 be altered in any way during operation of

the circuit.

The Examiner asserts that Fullerton discloses that the process of phase locking will be

updated continuously, and concludes that if the PLL (Applicant assumes this refers to the lock

loop filter 742) is not locked, the feedback signal (Applicants assume this refers to the filtered

error signal 744 or the periodic timing signal 716) will change. However, whether or not the

filtered error signal 744 or the periodic timing signal 716 change during operation does not

provide a teaching or suggestion that the parameters of the lock loop filter 742 (specifically any

threshold it uses) be altered. In fact, as the process of phase locking proceeds, the output of the

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lock loop filter 742 will change even with a constant threshold parameter. And Fullerton

provides no indication that the parameters of the lock loop filter 742 should change.

Thus, nothing in Fullerton discloses or suggests changing a value of said predetermined

threshold, and repeating said steps of comparing and shifting using the changed predetermined

threshold, as recited in amended claim 1.

Claims 2-5, 12, 13, 15, and 17-19 depend variously from claim 1 and are allowable for at

least the reasons given above for claim 1. Applicants have cancelled claims 14 and 16, thus

rendering moot this ground of rejection as it pertains to those claims.

In addition, claim 12 recites that the incoming UWB signal comprises at least one of bi-

phase-modulated pulses and quadrature phase-modulated pulses. The Examiner asserts that since

Fullerton discloses an m-ary modulation scheme can be used, it likewise discloses this feature.

Applicants respectfully traverse this assertion.

There are m-ary modulation schemes that do not involve the use of bi-phase-modulated

pulses or quadrature phase-modulated pulses. M-ary simply means that there are two or more

modulation possibilities. Thus, simply disclosing an m-ary modulation scheme does not teach or

suggest using bi-phase-modulated pulses or quadrature phase-modulated pulses. Since Fullerton

provides no specific suggestion that the type of m-ary modulation use bi-phase-modulated pulses

or quadrature phase-modulated pulses, it fails to anticipate this recited feature in claim 12.

Furthermore, claim 19 recites that the step of determining a lock parameter comprises

calculating $L = sign(m_1 - Ks_1)$, wherein L is a lock parameter, m_1 is a first measurement of a

signal-to-noise relationship, K is a constant value, and s_1 is a second measurement of a signal-to-

noise relationship. Nothing in Fullerton discloses or suggests this particular calculation be

performed.

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Amended claim 20 recites "a comparator configured to compare a parameter of the analysis result with a predetermined threshold to produce a comparison result," and that "the comparator can change a value of said predetermined threshold." This is shown in the specification, for example, in the description of the operation of the digital controller 110. (See, e.g., Applicants' specification, page 20, line 1, through page 22, line 5, page 26, line 2, through page 27, line 17, and FIGs. 5, 6, and 10A-11.)

As noted above with respect to claim 1, changing the threshold allows a synchronization to be attempted at lower and lower signal qualities until a minimum signal quality is reached below which synchronization is not possible.

This feature is not disclosed or suggested in Fullerton for the reasons set forth above with respect to claim 1.

Claims 21-25 and 31-35 depend ultimately from claim 20 and are allowable for at least the reasons given above for claim 20.

In addition, claim 31 recites that the incoming UWB signal comprises at least one of bi-phase-modulated pulses and quadrature phase-modulated pulses. The Examiner asserts that since Fullerton discloses an m-ary modulation scheme can be used, it likewise discloses this feature. Applicants respectfully traverse this assertion.

As noted above, there are m-ary modulation schemes that do not involve the use of bi-phase-modulated pulses or quadrature phase-modulated pulses. M-ary simply means that there are two or more modulation possibilities. Thus, simply disclosing an m-ary modulation scheme does not teach or suggest using bi-phase-modulated pulses or quadrature phase-modulated pulses. Since Fullerton provides no specific suggestion that the type of m-ary modulation use bi-

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phase-modulated pulses or quadrature phase-modulated pulses, it fails to anticipate this recited

feature in claim 31.

Applicants have amended claim 36 to recite that the means for comparing can change a

value of said predetermined threshold.

As noted above with respect to claim 1, changing the threshold allows a synchronization

to be attempted at lower and lower signal qualities until a minimum signal quality is reached

below which synchronization is not possible.

This feature is not disclosed or suggested in Fullerton for the reasons set forth above with

respect to claim 1.

Regarding claims 37, 65, and 88, the Examiner has asserted that Fullerton discloses a

method and apparatus in which a correlated signal is compared to a threshold to determine if a

lock has occurred in a lock loop filter 742, and that the receiver's signal phase will be shifted or

changed to match the timing of signal 730 to the timing of the incoming signal 708. He then

asserts that the phase will be altered for a value of less than 360 degrees since 360 degrees equals

zero degrees and no phase adjustment is necessary. However, this does not disclose or suggest

what is recited in amended claims 37, 65, and 88.

Applicants have amended claim 37 to recite analyzing the incoming UWB signal in light

of the receiver signal over a phase range greater than 0 radians and less than 2π radians to

produce an analysis result; Applicants have amended claim 65 to recite an analyzer configured to

analyze the incoming UWB signal in light of the receiver signal over a phase range greater than 0

radians and less than 2π radians to produce an analysis result; and Applicants have amended

claim 88 to recite a means for analyzing the incoming UWB signal in light of the receiver signal

over a phase range greater than 0 radians and less than 2π radians to produce an analysis result.

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This makes it clear that the incoming UWB signal is examined over less than the entire available

phase range of 2π radians, but specifically excludes the case where a phase range of zero is used.

Using a zero phase range would, in fact, make the circuit non-functional as for acquisition, since

it would not allow any other phases to be examined except for the starting phase.

In each of these claims, an incoming signal is analyzed over a phase range less than 2π

radians, and a desired phase angle is found within that lessened phase range. Thus, the recited

device or method need not look through the entire available 2π radians (i.e., the entire code

wheel) to determine a desired phase angle for the locally-generated receiver signal. This provides

the advantage of reducing acquisition time.

Nothing in Fullerton discloses or suggests that a desired phase angle be determined using

anything less than the entire available 2π radians. One skilled in the art at the time Fullerton was

disclosed would have understood that the entire code wheel should be checked, and nothing in

Fullerton contradicts this. And certainly nothing in Fullerton provides a disclosure that an

incoming signal only be analyzed over a phase range between 0 radians and 2π radians.

Claims 37-49, 55-60, and 62-64 depend variously from claim 37 and are allowable for at

least the reasons given above for claim 37. Claims 66-77 and 83-87 depend variously from claim

65 and are allowable for at least the reasons given above for claim 65. Applicants have cancelled

claim 61, thus rendering this rejection moot as it pertains to this claim.

In addition, claims 55 and 83 recite that the incoming UWB signal comprises at least one

of bi-phase-modulated pulses and quadrature phase-modulated pulses. The Examiner asserts that

since Fullerton discloses an m-ary modulation scheme can be used, it likewise discloses this

feature. Applicants respectfully traverse this assertion.

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As noted above, there are m-ary modulation schemes that do not involve the use of bi-phase-modulated pulses or quadrature phase-modulated pulses. M-ary simply means that there are two or more modulation possibilities. Thus, simply disclosing an m-ary modulation scheme does not teach or suggest using bi-phase-modulated pulses or quadrature phase-modulated pulses. Since Fullerton provides no specific suggestion that the type of m-ary modulation use bi-phase-modulated pulses or quadrature phase-modulated pulses, it fails to anticipate this recited feature in claims 55 and 83.

Also, claims 39-43, 57-60, 67-71, and 85-87 further define how the lessened phase range is implemented. Since Fullerton does not disclose that a lessened phase range is used at all, it likewise does not disclose any of these recited features related to the lessened phase range.

Furthermore, claim 63 recites that the step of determining a lock parameter comprises calculating $L = sign(m_1 - Ks_1)$, wherein L is a lock parameter, m_1 is a first measurement of a signal-to-noise relationship, K is a constant value, and s_1 is a second measurement of a signal-to-noise relationship. Nothing in Fullerton discloses or suggests this particular calculation be performed.

Therefore, based on at least the reasons given above, Applicant respectfully requests that the Examiner withdraw the rejection of claims 1-6, 12-25, 31-49, 55-77 and 83-88 under 35 U.S.C. § 102(e) as being allegedly anticipated by Fullerton.

Claim Rejections 35 USC § 103

The Examiner has rejected claims 7-11, 26-30, 50-54 and 78-82 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Fullerton, in view of United States Patent No. 6,239,741 to Fontana et al. ("Fontana").

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Claims 7-11 depend ultimately from claim 1 and are allowable for at least the reasons

given above for claim 1; claims 26-30 depend ultimately from claim 20 and are allowable for at

least the reasons given above for claim 20; claims 50-54 depend ultimately from claim 37 and are

allowable for at least the reasons given above for claim 37; and claims 78-82 depend ultimately

from claim 65 and are allowable for at least the reasons given above for claim 65. Fontana does

not cure the deficiencies in Fullerton noted above with respect to claims 1, 20, 37, and 65.

Furthermore, what Fullerton does not disclose with respect to claims 1, 20, 37, and 65, it also

does not suggest.

In addition, claim 9 recites that the step of amplifying comprises maintaining a

substantially constant bit error rate; claim 10 recites that the step of amplifying comprises

obtaining a substantially constant noise in the amplified incoming UWB signal; claims 28 and 80

recite that the amplifier further comprises a feedback loop configured to maintain a substantially

constant bit error rate; claims 29 and 81 recite that the amplifier further comprises a feedback

loop configured to maintain a substantially constant noise in the amplified incoming UWB

signal; claim 52 recites that the step of amplifying comprises a step of maintaining a substantially

constant bit error rate; and claim 53 recites that the step of amplifying comprises a step of

obtaining a substantially constant noise in the amplified incoming UWB signal. In each of these

cases the amplification process or apparatus specifically operate to maintain a constant BER or

noise.

The Examiner has asserted that the noise and bit error rate will not change once the signal

has been amplified. However, this is not the case. As environmental parameters change, the noise

and BER may also change. Applicants specifically recite operating the amplifier process or

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apparatus to maintain these values constant. Absent a specific teaching or suggestion of this,

Fontana cannot be relied upon as showing this feature.

Therefore, based on at least the reasons given above, Applicant respectfully requests that

the Examiner withdraw the rejection of claims 7-11, 26-30, 50-54 and 78-82 under 35 U.S.C.

§ 103(a) as being allegedly unpatentable over Fullerton, in view of Fontana.

The Examiner has rejected claims 18 and 62 under 35 U.S.C. § 103(a) as being

unpatentable over Fullerton, in view of United States Patent No. 5,841,808 to Rizzo et al.

("Rizzo").

Claim 18 depends from claim 1 and is allowable for at least the reasons given above for

claim 1; claims 62 depends from claim 37 and is allowable for at least the reasons given above

for claim 37. Rizzo does not cure the deficiencies in Fullerton noted above with respect to claims

1, 20, 37, and 65. Furthermore, what Fullerton does not disclose with respect to claims 1 and 37

it also does not suggest.

Therefore, based on at least the reasons given above, Applicant respectfully requests that

the Examiner withdraw the rejection of claims 18 and 62 under 35 U.S.C. § 103(a) as being
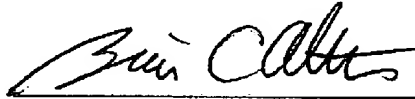
unpatentable over Fullerton, in view of Rizzo.

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Conclusion

Accordingly, Applicant respectfully submits that the claims, as amended, clearly and

patentably distinguish over the cited references of record and as such are deemed allowable. Such

allowance is hereby earnestly and respectfully solicited at an early date. If the Examiner has any

suggestions, comments, or questions, calls are welcome at the telephone number below.

Although it is not anticipated that any additional fees are due or payable, the

Commissioner is hereby authorized to charge any fees that may be required to Deposit Account

No. **50-1147.**

Respectfully Submitted,

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Date: February 2, 2005

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